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EXAMINER

STULTZ, JESSICA T

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/814,402
Filing Date: March 31, 2004
Appellant(s): BHOWMIK ET AL.

MAILED
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Timothy N. Trop
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 20, 2007 appealing from the Office action mailed November 8, 2006.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|-----------|-------------------|---------|
| 5,844,249 | TAKANO ET AL. | 12-1998 |
| 6,879,615 | HENRICHS | 04-2005 |
| 5,396,362 | YAKYMYSHYN ET AL. | 03-1995 |

US 2002/0158866 BATCHKO 10-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-6, 12-18, and 20-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Takano et al US 5,844,249, herein referred to as Takano et al '249.

Regarding claim 1, Takano et al '249 discloses a method comprising: displaying an image (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, "100" is displayed by display means "104", Figure 5) using a second order non-linear electro-optic effect (Column 9, line 42-Column 11, line 21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claim 4, Takano et al '249 further discloses forming a second order non-linear electro-optic film over a substrate (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the film "14" of the optical imager "100" exhibits a second order non-linear electro-optic effect and is formed over a substrate "10", Figures 1a-d).

Regarding claim 12, Takano et al '249 discloses an imager (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, "100" is displayed by display means "104", Figure 5) comprising: a second order non-linear electro-optic film (Column 9, line 42-Column

11, line 21, wherein the film “14” of the optical sensor “100” exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claim 20, Takano et al ‘249 discloses a system comprising: a processor; and an imager coupled to the processor (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, “100” is coupled to processor “104”, Figure 5), the imager including a second order non-linear electro-optic effect film (Column 9, line 42-Column 11, line 21, wherein the film “14” of the optical sensor “100” exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claims 13 and 21, Takano et al ‘249 further discloses a support structure covered by a thermal interface material and a substrate over the support structure (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the support structure “18” is a hot plate and is therefore covered by a thermal interface material and the substrate is “10”, Figures 1a-d).

Regarding claims 5-6, 14-15, and 22-23, Takano et al ‘249 further discloses forming transistors in the substrate, including memory and drive transistors (Column 7, lines 1-61 and Column 21, lines 12-34, wherein the sensor “100” is applied to substrates including memory and drive transistors, Figures 1a-d and 5).

Regarding claims 16-17, and 24-25, Takano et al ‘249 further discloses that the film has a switching speed of at least one gigahertz, specifically greater than 100 gigahertz (Column 15, lines 20-36, wherein the sensor “100” and therefore film “14” has a switching speed ranging between 1 Hz to a Terahertz and therefore falls within the claimed range).

Regarding claims 18 and 26, Takano et al ‘249 further discloses that the film includes a stilbene-based organic molecular salt (Column 11, lines 4-59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claim 1 as shown above, in view of Henrichs US 6,879,615, herein referred to as Henrichs '615.

Regarding claim 2, Takano et al '249 disclose a method of displaying an image using a second-order non-linear electro-optic effect in an imager as shown above, but does not specifically disclose that the imager is used in a high end large screen rear projection high definition television. In the same field of endeavor of displays, Henrichs '615 teaches of imaging a display including a non-linear second-order optical process (Column 27, line 64-Column 28, line 12) to be used in a large screen rear projection high definition television for the purpose of providing a frequency doubled single laser device within the display system for compact manufacturing (Column 34, line 52-Column 35, line 12). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of displaying an image of Takano et al '249 to include using an imager in a high end large screen rear projection high definition television since Henrichs '615 teaches of imaging a display including a non-linear second-order optical process to be used in a large screen rear projection high definition television for the purpose of providing a frequency doubled single laser device within the display system for compact manufacturing.

Regarding claim 7, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses forming a support structure covered by a thermal interface material and forming a substrate over the support structure (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the support structure "18" is a hot plate and is therefore covered by a thermal interface material and the substrate is "10", Figures 1a-d).

Regarding claims 8-9, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses forming a film having a switching speed of at least one gigahertz, specifically greater than 100 gigahertz (Column 15, lines 20-36, wherein the sensor "100" and therefore film "14" has a switching speed ranging between 1 Hz to a Terahertz and therefore falls within the claimed range).

Regarding claim 10, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses the step of forming a film including a stilbene-based organic molecular salt (Column 11, lines 4-59).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249 in view of Henrichs '615, as applied to independent claim 10 as shown above, and further in view of Yakymyshyn et al US 5,396,362, herein referred to as Yakymyshyn et al '362.

Regarding claim 11, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image including using an imager including a film exhibiting a second-order non-linear electro-optic effect, wherein the film comprises a stilbene-based organic molecular salt as

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shown above, but does not specifically disclose that the film includes 4'-dimethylamino-N-methyl-4-stilbazolium tosylate. In the same field of endeavor of films exhibiting second-order non-linear electro-optic effects, Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light (Column 3, line 54-Column 4, line 20). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the film of Takano et al '249 and Henrichs '615 to further comprise 4'-dimethylamino-N-methyl-4-stilbazolium tosylate since Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light.

Claims 19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claims 12 and 20 as shown above, in view of Yakymyshyn et al '362.

Regarding claims 19 and 27, Takano et al '249 discloses a system including an imager with a film exhibiting a second-order non-linear electro-optic effect, wherein the film comprises a stilbene-based organic molecular salt as shown above, but does not specifically disclose that the film includes 4'-dimethylamino-N-methyl-4-stilbazolium tosylate. In the same field of endeavor of films exhibiting second-order non-linear electro-optic effects, Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the

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purpose of exhibiting strong absorption bands for certain wavelengths of light (Column 3, line 54-Column 4, line 20). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the film of Takano et al '249 to further comprise 4'-dimethylamino-N-methyl-4-stilbazolium tosylate since Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light.

Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claims 1 and 20 as shown above, in view of Batchko US 2002/0158866, herein referred to as Batchko '866.

Regarding claims 3 and 28, Takano et al '249 discloses a method for displaying an image and a system including an imager with a film exhibiting a second-order non-linear electro-optic effect as shown above, but does not specifically disclose the step of forming an imager for a front-projection system. In the same field of endeavor of imaging devices, Batchko '866 teaches of an imager including a film exhibiting a second-order non-linear electro-optic effect (Section 42 and 48, wherein the films "1080" exhibit a second-order non-linear electro-optic effect and produce an image "1120", Figure 1), wherein the imager is used for a front-projection system for the purpose of providing an image with variable optical properties including position, magnification and aberrations (Section 44, wherein the image "1120" is projected onto plane "1110", Figure 1). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method for displaying an image and a system including an imager of Takano et al '249 to include the step of forming an imager for a front-projection

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system since Batchko '866 teaches of an imager including a film exhibiting a second-order non-linear electro-optic effect, wherein the imager is used for a front-projection system for the purpose of providing an image with variable optical properties including position, magnification and aberrations.

(10) Response to Argument

Appellant's argument against the 35 U.S.C. 102 (b) rejection of claims 1, 4-6, 12-18, and 20-26 is that the Takano et al '249 reference does not disclose displaying an image since Takano et al '249 discloses detecting defects in wires on a wiring board wherein the optical sensor includes a film of polymer of non-linear optical material. The examiner disagrees since Takano et al '249 discloses displaying an image (Column 16, lines 15-39, wherein the image detected by the optical sensor, i.e. imager, "100" is displayed by display means "104", Figure 5) using a second order non-linear electro-optic effect (Column 9, line 42-Column 11, line 21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5). Specifically, Takano et al '249 discloses an image (wherein the image is a representation of data that is shown on a display) of the distribution situation of voltages detected by the detecting means, wherein the image is formed using optical sensor "100", which comprises film "14" that exhibits a second order non-linear electro-optic effect, as shown above.

Appellant's second argument is that the second order non-linear effect is not used to display an image, rather that the image is formed by another element. The examiner disagrees since Takano et al '249 specifically discloses that the method of displaying an image (Column 16, lines 15-39, wherein the image detected by optical sensor, i.e. imager, "100" is displayed by display means "104", Figure 5) utilizes a second order non-linear electro-optic effect (Column 9,

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line 42-Column 11, line 21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, wherein the optical sensor detects the data to be displayed as an image by display means "104", Figures 1a-d and 2-5). Therefore the optical sensor "100", and thereby a second order non-linear electro-optic effect as shown above, is used to display an image on display means "104".

Appellant's argument against the 35 U.S.C. 103 (a) rejections of claims 2-3, 7-11, 19, and 27-28 is the same as those for the 102(b) rejections in view of Takano et al '249 and therefore the examiner maintains the rejection of these claims for the same reasons as stated above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jessica Stultz

June 27, 2007

Conferees:

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